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AUTHOR Donovan, David L.; And Others
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ABSTRACT

This explanatory report was prepared to assist educators in the interpretation of the local and school district summary reports provided by the 1973-74 Michigan Educational Assessment Program. Information concerning the interpretation of student and classroom reports was provided in a separate report. The first section of this report describes the educational assessment measures used in the 1973-74 program. The second contains aids for interpreting the information contained in the reports and includes facsimiles of the forms used to report assessment results to local school districts. The final section contains cautions that should be exercised in the interpretation of the school and school district reports. Appendix A contains a listing of the mathematics and reading performance objectives for grades four and seven assessed in the 1973-74 program; Appendix B contains the norm tables necessary for interpreting the human and financial resource information at the school and district levels; Appendix C contains the definitions of the educational assessment measures. (Author)

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School and District Reports: Explanatory Materials 1973-74

Michigan Educational Assessment Program

Third Report

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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SCHOOL AND DISTRICT REPORTS: EXPLANATORY MATERIALS

The Third Report of the 1973—74
Michigan Educational Assessment Program

Prepared by Research, Evaluation, and Assessment Services

Michigan Department of Education

October, 1973

FOREWORD

The Michigan Educational Assessment Program (MEAP) was initiated by the State Board of Education, supported by the Governor, and funded by the Legislature initially through enactment of Act 307 of the Public Acts of 1969, and subsequently under Act 38 of the Public Acts of 1970. This report, the third in the 1973—74 series of MEAP reports, provides information which will assist school district staff in the interpretation of the individual pupil and classroom educational assessment results. It is hoped that the information provided by the educational assessment will be useful to educators and citizens in improving education for all Michigan children and youth.

Thanks are due to a large number of Michigan teachers, school administrators, and lay citizens for their cooperation with and assistance to the Department in developing the assessment program. Educators and other citizens were involved in the development and reviews of the performance objectives which form the basis of the objective-referenced reading and mathematics tests used in the 1973—74 educational assessment program. The tests were developed by Michigan educators and validated during the 1972—73 school year in several Michigan school districts. The program was designed and administered by the Research, Evaluation, and Assessment Services (REAS), Michigan Department of Education, with the assistance of Measurement Research Center, Iowa City, Iowa, and the advice of the REAS Council.

This report was prepared by the educational assessment staff, including Dr. David L. Donovan, Dr. Thomas H. Fisher, Mr. Robert J. Huyser, Mrs. June Olsen, Dr. Edward D. Roeber, and Dr. Daniel E. Schooley. Questions or requests for additional information relative to this report should be directed to the educational assessment staff.

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INTRODUCTION

This explanatory report was prepared to assist educators in the interpretation of the local and school district summary reports provided by the 1973—74 Michigan Educational Assessment Program. Information concerning the interpretation of student and classroom reports was provided in a separate report.[1]

The first section of this report describes the educational assessment measures used in the 1973—74 program. The second section contains aids for interpreting the information contained in the reports and includes facsimiles of the forms used to report assessment results to local school districts. The final section contains cautions that should be exercised in the interpretation of the school and school district reports.

APPENDIX A contains a listing of the mathematics and reading performance objectives for grades four and seven assessed in the 1973—74 program; APPENDIX B contains the norm tables necessary for interpreting the human and financial resource information at the school and district levels; APPENDIX C contains the definitions of the educational assessment measures.

[1]**Individual Student and Classroom Report: Explanatory Materials.** Lansing, Michigan: Michigan Department of Education, October, 1973. (1973—74 Michigan Educational Assessment Program, Second Report.)

SECTION I

LISTING OF THE EDUCATIONAL ASSESSMENT MEASURES

The measures reported in the 1973—74 Michigan Educational Assessment Program are listed in TABLE I grouped into seven major categories: (A) Human Resources; (B) District Financial Resources; (C) Percent Minority; (D) Dropout Rate; (E) Student Achievement; (F) Size Measures; and (G) Attitudes (optional). Sources of the information used to compute each measure and definitions of the measures appear in APPENDIX C.

TABLE I also shows which measures are reported at the district level and which are reported at the school level. Eight of the twenty-two items are reported only at the district level.

The 1973—74 educational assessment program provided achievement measures of (1) mathematics, (2) reading, and (3) Word Relationships. In contrast with past educational assessment programs which employed norm-referenced tests, the mathematics and reading instruments are objective-referenced. Each test contains items that measure a selected set of minimal performance objectives in reading or mathematics. The minimal performance objectives were selected from those developed by educators and reviewed by commissions made up of teachers, administrators, curriculum specialists, and lay citizens cooperating with the Department of Education. Having been formally adopted by the State Board of Education, these performance objectives represent a set of minimal expectancies applicable to all beginning fourth and seventh grade students in Michigan.

In 1972, a project was begun to write and validate test items to measure the minimal mathematics and reading objectives. Under contract to the Michigan Department of Education, five school districts (Alma and St. Louis, Jackson, Pontiac, and Waterford, in cooperation with the Michigan Council of Teachers of Mathematics) wrote the items. The test items were edited by staff members of the Department and of California Test Bureau/McGraw-Hill, who served as technical support contractor for the project. The items were tried out in the districts under contract and in the Detroit Public Schools. Final item revisions were based on teachers' comments and reviews by subject-matter specialists in the light of item tryout data. The final instruments were produced by the technical support contractor following specifications approved

TABLE I

A LIST OF THE TWENTY-TWO MEASURES REPORTED

AT THE DISTRICT OR SCHOOL LEVEL

MEASURES	DISTRICT	SCHOOL
A. Human Resources		
(1) Professional Instructional Staff per 1,000 Pupils	X	X
(2) Teachers per 1,000 Pupils	X	X
(3) Average Years Teaching Experience	X	X
(4) Percent of Teachers with Master's Degree or Above	X	X
(5) Average Contracted Salary per Teacher	X	X
B. District Financial Resources		
(6) State Equalized Valuation per Resident Member (1971—72)	X	
(7) Local Revenue per Pupil (1971—72)	X	
(8) State School Aid per Pupil (1971—72)	X	
(9) K-12 Instructional Expense per Pupil (1971—72)	X	
(10) Elementary Instructional Expense per Pupil (1971—72)	X	
(11) Total Current Operating Expense per Pupil (1971—72)	X	
(12) Total Operating Millage (1971—72)	X	
C. Percent Minority		
(13) Percent of Racial-Ethnic Minority Students	X	X
D. Dropout Rate		
(14) School Dropout Rate (1971—72)	X	
E. Student Achievement (Provided separately for grades 4 and 7)		
(15) Word Relationships*	X	X
(16) Reading*	X	X
(17) Mathematics*	X	X
F. Size Measures		
(18) Grade 4 Membership	X	X
(19) Grade 7 Membership	X	X
(20) Total Membership	X	X
G. Attitudes (Optional)		
(21) Attitude toward Self*	X	X
(22) Attitude toward School*	X	X

NOTE: Undated measures are based on 1972—73 data.

* Reported also at the classroom level.

by the Department.

The minimal performance objectives selected for the 1973—74 program are provided in APPENDIX A. It is emphasized that these performance objectives represent only a portion of the total set of minimal performance objectives. The reading and mathematics tests, which are described below, provide measures of this partial set of objectives. The Word Relationships test is not objective-referenced.

Mathematics

The fourth grade mathematics test provides measures of thirty-five minimal performance objectives. The seventh grade test contains measures of forty-five objectives. There are five multiple-choice test items for each objective in both tests. Each test also includes several items that are to be read to the student by the test administrator.

Reading

Both the fourth and seventh grade reading tests contain measures of twenty-three minimal performance objectives. As with the mathematics test, there are five test items that measure each objective at both grades. The fourth grade test contains several items that are to be read to students by the test administrator.

Word Relationships

The Word Relationships portion of the educational assessment battery measures knowledge of the meanings of words and understanding of relationships among words and concepts. This is accomplished through use of verbal analogy items. While test experts agree that verbal analogy items yield a measure that reflects both ability and achievement, they are divided as to the balance between these two components. The Word Relationships score is not considered to be very sensitive to instruction in the short run and may be considered for purposes of this program as a test of developed verbal ability. The Word Relationships instruments are identical to the corresponding instruments used in the 1972—73 MEAP.

SECTION TWO

DESCRIPTION AND INTERPRETATION OF THE SCHOOL AND DISTRICT REPORTS

Local educators will receive one report that summarizes student performance at the school level and another summary for the entire school district. Because objective-referenced mathematics and reading tests have been introduced, the reports of school and district results are much more extensive than in past years.

Both the school and district reports are illustrated and described in this section. Educators will be provided with separate school and district reports for grades 4 and 7. Because the formats of the 4th and 7th grade reports are identical, only the fourth grade reports are shown. The major sections of each report have been labeled with letters for purposes of this discussion in order to clarify the references to them in the text.

Classroom, School, and District Summary Form

The Classroom, School, and District Summary Form is used to report summaries of the assessment data at three levels: for each classroom, school, and school district. The classroom version of this report form is discussed and illustrated in the booklet titled **Individual Student and Classroom Reports: Explanatory Materials.**[2] For purposes of this discussion, only the school and school district versions of this report form are explained.

School Summary

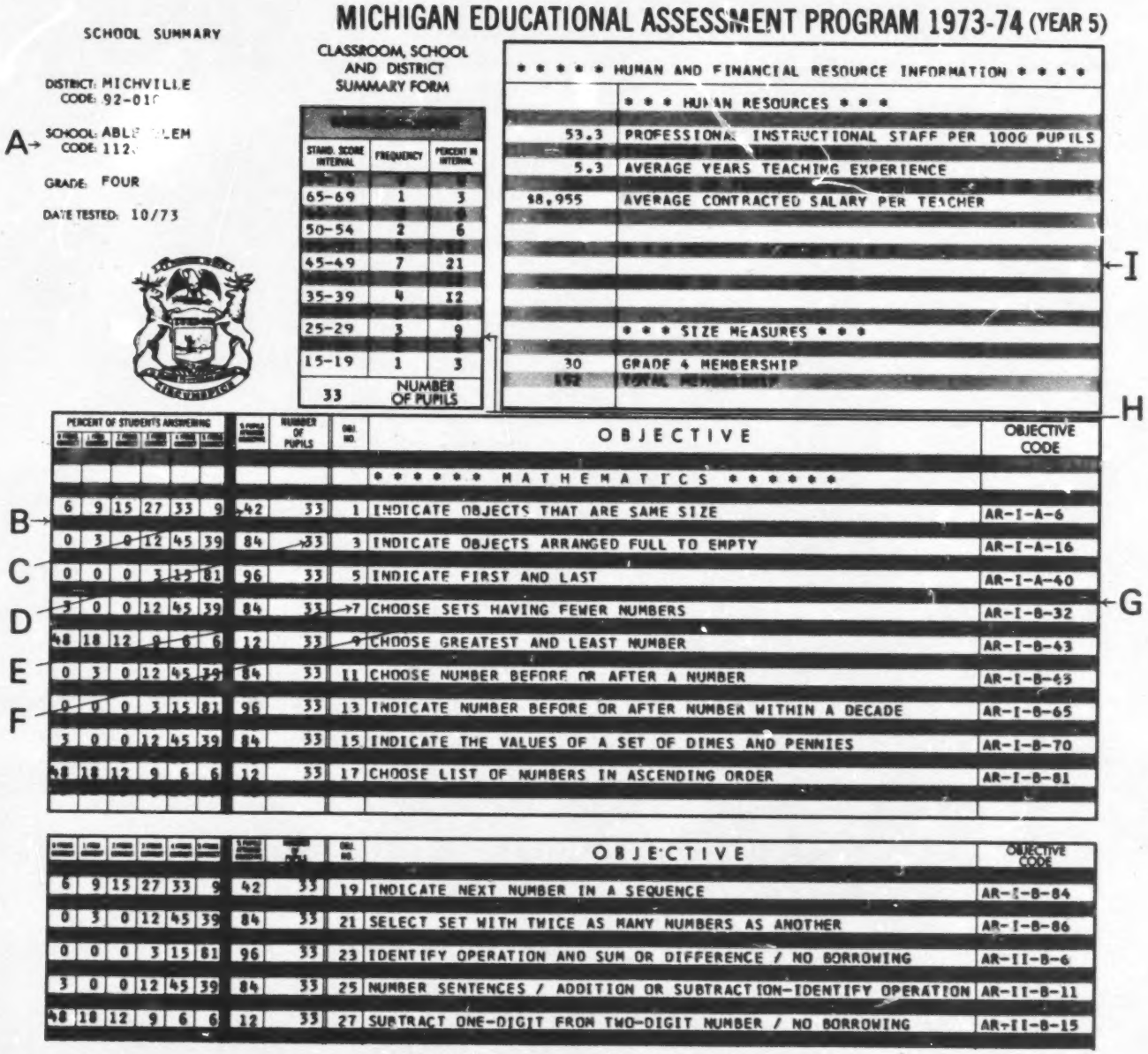
An example of the first page of the two-page school report is shown in FIGURE 1. The second page of the report is a continuation of the information provided on the first page. Able School is a hypothetical elementary school used in FIGURE 1 to illustrate with fictitious data the format of the school summary.

Section A of the report contains necessary identification information: the type of report (whether a school or district summary), the five-digit district code, the four-digit school code, and grade tested.

Section B shows the percent of students who correctly responded to 0, 1, 2, 3, 4, or 5 items for each

[2] **Individual Student and Classroom Reports: Explanatory Materials.** Lansing, Michigan: Michigan Department of Education, October, 1973. (1973—74 Michigan Educational Assessment Program, Second Report.)

FIGURE 1: THE SCHOOL SUMMARY FORM



SCHOOL SUMMARY

DISTRICT: MICHVILLE
CODE: 92-01[illegible]

A → SCHOOL: ABLE [illegible]LEM
CODE: 112[illegible]

GRADE: FOUR

DATE TESTED: 10/73

MICHIGAN EDUCATIONAL ASSESSMENT PROGRAM 1973-74 (YEAR 5)

CLASSROOM, SCHOOL AND DISTRICT SUMMARY FORM

STAND. SCORE INTERVAL	FREQUENCY	PERCENT IN INTERVAL
65-69	1	3
50-54	2	6
45-49	7	21
35-39	4	12
25-29	3	9
15-19	1	3
33	NUMBER OF PUPILS	

	* * * * * HUMAN AND FINANCIAL RESOURCE INFORMATION * * * *
	* * * HUMAN RESOURCES * * *
53.3	PROFESSIONAL INSTRUCTIONAL STAFF PER 1000 PUPILS
5.3	AVERAGE YEARS TEACHING EXPERIENCE
$8,955	AVERAGE CONTRACTED SALARY PER TEACHER
	* * * SIZE MEASURES * * *
30	GRADE 4 MEMBERSHIP
192	TOTAL MEMBERSHIP

← I

← H

PERCENT OF STUDENTS ANSWERING						NUMBER OF PUPILS	OBJ. NO.	OBJECTIVE	OBJECTIVE CODE
								* * * * * * MATHEMATICS * * * * * *	
6	9	15	27	33	9	33	1	INDICATE OBJECTS THAT ARE SAME SIZE	AR-I-A-6
0	3	0	12	45	39	33	3	INDICATE OBJECTS ARRANGED FULL TO EMPTY	AR-I-A-16
0	0	0	3	15	81	33	5	INDICATE FIRST AND LAST	AR-I-A-40
3	0	0	12	45	39	33	7	CHOOSE SETS HAVING FEWER NUMBERS	AR-I-B-32
48	18	12	9	6	6	33	9	CHOOSE GREATEST AND LEAST NUMBER	AR-I-B-43
0	3	0	12	45	39	33	11	CHOOSE NUMBER BEFORE OR AFTER A NUMBER	AR-I-B-43
0	0	0	3	15	81	33	13	INDICATE NUMBER BEFORE OR AFTER NUMBER WITHIN A DECADE	AR-I-B-65
3	0	0	12	45	39	33	15	INDICATE THE VALUES OF A SET OF DIMES AND PENNIES	AR-I-B-70
48	18	12	9	6	6	33	17	CHOOSE LIST OF NUMBERS IN ASCENDING ORDER	AR-I-B-81

6	9	15	27	33	9	33	19	INDICATE NEXT NUMBER IN A SEQUENCE	AR-I-B-84
0	3	0	12	45	39	33	21	SELECT SET WITH TWICE AS MANY NUMBERS AS ANOTHER	AR-I-B-86
0	0	0	3	15	81	33	23	IDENTIFY OPERATION AND SUM OR DIFFERENCE / NO BORROWING	AR-II-B-6
3	0	0	12	45	39	33	25	NUMBER SENTENCES / ADDITION OR SUBTRACTION-IDENTIFY OPERATION	AR-II-B-11
48	18	12	9	6	6	33	27	SUBTRACT ONE-DIGIT FROM TWO-DIGIT NUMBER / NO BORROWING	AR-II-B-15

B → 6 9 15 27 33 9 | 42 | 33 | 1 | INDICATE OBJECTS THAT ARE SAME SIZE | AR-I-A-6

C → 0 3 0 12 45 39 | 84 | 33 | 3 | INDICATE OBJECTS ARRANGED FULL TO EMPTY | AR-I-A-16

D → 0 0 0 3 15 81 | 96 | 33 | 5 | INDICATE FIRST AND LAST | AR-I-A-40

E → 3 0 0 12 45 39 | 84 | 33 | 7 | CHOOSE SETS HAVING FEWER NUMBERS | AR-I-B-32 ← G

F → 0 3 0 12 45 39 | 84 | 33 | 11 | CHOOSE NUMBER BEFORE OR AFTER A NUMBER | AR-I-B-43

0 0 0 3 15 81 | 96 | 33 | 13 | INDICATE NUMBER BEFORE OR AFTER NUMBER WITHIN A DECADE | AR-I-B-65

3 0 0 12 45 39 | 84 | 33 | 15 | INDICATE THE VALUES OF A SET OF DIMES AND PENNIES | AR-I-B-70

48 18 12 9 6 6 | 12 | 33 | 17 | CHOOSE LIST OF NUMBERS IN ASCENDING ORDER | AR-I-B-81

6 9 15 27 33 9 | 42 | 33 | 19 | INDICATE NEXT NUMBER IN A SEQUENCE | AR-I-B-84

0 3 0 12 45 39 | 84 | 33 | 21 | SELECT SET WITH TWICE AS MANY NUMBERS AS ANOTHER | AR-I-B-86

0 0 0 3 15 81 | 96 | 33 | 23 | IDENTIFY OPERATION AND SUM OR DIFFERENCE / NO BORROWING | AR-II-B-6

3 0 0 12 45 39 | 84 | 33 | 25 | NUMBER SENTENCES / ADDITION OR SUBTRACTION-IDENTIFY OPERATION | AR-II-B-11

48 18 12 9 6 6 | 12 | 33 | 27 | SUBTRACT ONE-DIGIT FROM TWO-DIGIT NUMBER / NO BORROWING | AR-II-B-15

of the performance objectives in mathematics and reading. This frequency distribution shows how close students who did not attain the objective came to attaining it.

Section C of the report shows the percentage of pupils that attained each objective. Each student must correctly answer four or more of the five test items that measure each objective in order to attain the objective. Section D shows the total number of students tested in each school or school district.

Section E contains the number assigned to each mathematics and reading objective. A brief description of the objective appears in Section F. These brief descriptions are designed to help the educator remember the complete wording of the objectives which can be found in APPENDIX A or in the booklets of minimal performance objectives which have been sent to each school district in the state.

The objective codes given in Section G refer to the coding system used in the complete set of mathematics and reading objectives.

Section H contains a summary of the Word Relationships scores for the classroom. This summary contains a distribution of standard scores on the test which shows the number and percent of students whose scores fall into each score interval. The total number of students who took the Word Relationships test is also provided.

Section I is used to present data on district and school human and financial resources. The human resource variables reported at the school level are illustrated in FIGURE 1, Section I. All of the variables listed in TABLE 1 to be reported at the school level are given in Part I, with the exception of the student achievement data (reported in Sections B through G of this report) and the optional attitude scores, which are provided and explained in a separate report.

District Summary

FIGURE 2 illustrates the district summary form. Michville Public Schools is used as a hypothetical school district in FIGURE 2 to illustrate with fictitious data the format of the district summary.

As mentioned previously, the same report form is used to present the school and district summary reports. Sections A through H of the district summary contain the same types of information as the school summary, except, of course, that the district summary report summarizes the data from all schools in the district. Section I of the district summary contains the list of the human and financial resource variables from TABLE 1 that are reported at the district level.

FIGURE 2: DISTRICT SUMMARY FORM

DISTRICT SUMMARY

DISTRICT: MICHVILLE
CODE: 92-010

A → SCHOOL CODE:

GRADE: FOUR

DATE TESTED: 08/73

MICHIGAN EDUCATIONAL ASSESSMENT PROGRAM 1973-74 (YEAR 5)

CLASSROOM, SCHOOL AND DISTRICT SUMMARY FORM

STAND. SCORE INTERVAL	FREQUENCY	PERCENT IN INTERVAL
65-69	1	3
50-54	2	6
45-49	7	21
35-39	4	12
25-29	3	9
15-19	1	3
33	NUMBER OF PUPILS	

	* * * * * HUMAN AND FINANCIAL RESOURCE INFORMATION * * * *
	* * * HUMAN RESOURCES * * *
49.5	TEACHERS PER 1000 PUPILS
5.3%	PERCENT OF TEACHERS WITH MASTERS DEGREE OR ABOVE
	* * * DISTRICT FINANCIAL RESOURCES * * *
122	LOCAL REVENUE PER PUPIL (1971-72)
855	K-12 INSTRUCTIONAL EXPENSE PER PUPIL (1971-72) ← I
7,843	TOTAL CURRENT OPERATING EXP. PER PUPIL (1971-72)
	* * * PERCENT MINORITY * * *
	* * * DROPOUT RATE * * *
0.0	
	* * * GR 4 MBRSHIP: 24 TOT MBRSHIP: 348 ← H

PERCENT OF STUDENTS ANSWERING						STAND. SCORE EQUIV.	NUMBER OF PUPILS	OBJ. NO.	OBJECTIVE	OBJECTIVE CODE
									* * * * * * MATHEMATICS * * * * * *	
6	9	15	27	33	9	42	33	1	INDICATE OBJECTS THAT ARE SAME SIZE	AR-I-A-6
0	3	0	12	45	39	84	33	3	INDICATE OBJECTS ARRANGED FULL TO EMPTY	AR-I-A-16
0	0	0	3	15	81	96	33	5	INDICATE FIRST AND LAST	AR-I-A-40
3	0	0	12	45	39	84	33	7	CHOOSE SETS HAVING FEWER NUMBERS	AR-I-B-32 ← G
48	18	12	9	6	6	12	33	9	CHOOSE GREATEST AND LEAST NUMBER	AR-I-B-43
0	3	0	12	45	39	84	33	11	CHOOSE NUMBER BEFORE OR AFTER A NUMBER	AR-I-B-45
0	0	0	3	15	81	96	33	13	INDICATE NUMBER BEFORE OR AFTER NUMBER WITHIN A DECADE	AR-I-B-65
3	0	0	12	45	39	84	33	15	INDICATE THE VALUES OF A SET OF DIMES AND PENNIES	AR-I-B-70
48	18	12	9	6	6	12	33	17	CHOOSE LIST OF NUMBERS IN ASCENDING ORDER	AR-I-B-81

									OBJECTIVE	OBJECTIVE CODE
6	9	15	27	33	9	42	33	19	INDICATE NEXT NUMBER IN A SEQUENCE	AR-I-B-84
0	3	0	12	45	39	84	33	21	SELECT SET WITH TWICE AS MANY NUMBERS AS ANOTHER	AR-I-B-86
0	0	0	3	15	81	96	33	23	IDENTIFY OPERATION AND SUM OR DIFFERENCE / NO BORROWING	AR-II-B-6
3	0	0	12	45	39	84	33	25	NUMBER SENTENCES / ADDITION OR SUBTRACTION-IDENTIFY OPERATION	AR-II-B-11
48	18	12	9	6	6	12	33	27	SUBTRACT ONE-DIGIT FROM TWO-DIGIT NUMBER / NO BORROWING	AR-II-B-15

B → C → D → E → F →

8.

Norm Tables for Interpreting the Human and Financial Resource Information

Three different norm tables are provided in APPENDIX B for local educators to use in interpreting the human and financial resource information reported on the school and district summaries. Because the mathematics and reading tests are objective-referenced instruments, no norms are provided for these variables.

A statewide district norm table and two school norm tables (for fourth and seventh grade) are included. The district and school norm tables are based on available statewide data for K-12 districts in operation as of January, 1973. These norm tables are identical to those used in conjunction with reports of information from the 1972—73 Michigan Educational Assessment Program and are described in detail elsewhere.[3]

As in past years, profiles of the information for which norms are provided may be constructed. These profiles may allow educators to gain a greater understanding of the relative standing of their district and school on these variables. While the norms that are provided are useful for descriptive purposes, they are not necessarily useful for predictive purposes. That is, it should not be assumed that the same relative level of scores should be achieved in all areas for which norms are provided. The norms and profiles constructed from them may enable educators to quickly gain a visual impression of several characteristics of a school or district.

Interpreting the Objective-Referenced Test Information

Educators should consider the suggestions for interpreting the information from the mathematics and reading objective-referenced tests in light of the cautions that are given in the third section of this report.

All beginning fourth or seventh grade students in the state should have attained each of the minimal performance objectives included in the 1973—74 educational assessment program. Where large numbers of students in a school or district have not attained the objective, educators should examine the local curriculum to determine whether students have received instruction toward the objective and whether changes should be made. These changes may include additional instruction, additional resources to provide new or additional materials, shifts in the sequence and pacing of instruction, and so forth.

[3]**Local District and School Report: Explanatory Materials.** Lansing, Michigan: Michigan Department of Education; March, 1973. (The Third Report of the 1972—73 Michigan Educational Assessment Program.)

Besides showing the percent of students who have attained each objective, the school and district summaries also help to show trends and patterns. These reports show for each performance objective how many of the test items measuring that objective students were able to answer correctly. Since students who answered three out of five test items correctly are closer to attaining the objective than those who missed all five of the items, this may indicate to educators the nature and extent of additional assistance needed by the students in a school or district.

Of course, only a part of the minimal performance objectives was measured in the 1973—74 educational assessment program. Additional important minimal performance objectives appropriate for end of grades three and six are given in the complete sets of minimal performance objectives which have been distributed to each school district. These documents should be examined to determine which additional objectives should be included in local assessment efforts. Local educators should also determine what additional performance objectives are considered important at the local level.

Objectives Affected by Items Not Reached

Items not reached (those questions in the Reading and Mathematics sections that follow the last question attempted by a pupil) are reported as blanks on the Individual Student Report Form; that is, the asterisk which signifies omits is not used for items not reached. When two or more items not reached measure the same objective, the **Objective Attained** space is also left blank to signify that the pupil's status on that objective was not determined. In that case the pupil's performance will not be reflected in the **Percent of Pupils Attaining Objective** category either on the Classroom Listing Form or on the Classroom, School, and District Summary Form.

SECTION THREE

QUALIFYING INFORMATION FOR INTERPRETING SCHOOL AND DISTRICT RESULTS

This section represents some precautions which educators should observe when interpreting the results contained in the school and district reports.

Relationships Among Educational Assessment Variables

Past research has indicated that certain characteristics of students' background (i.e., their relative socioeconomic status, attitudes, and aspirations) and the qualities of the instructional staff are related to achievement. In addition, available information has shown that the amount of financial resources spent by a district bears a relationship to achievement levels. Schools with more financial resources are generally able to provide a greater variety of instructional programs and support for the teaching staff.

These conclusions have been derived from statistical studies of large groups of school districts and schools. It must not be assumed, however, that the relationships among achievement and other variables would be reflected in the reports of individual districts and schools. Moreover, causal relationships have not been substantiated either by the previous research or by the Michigan Educational Assessment Program data. While causality may actually exist, the present data are not sufficient to demonstrate it.

Performance Objectives Are Minimal Objectives

The performance objectives measured by the assessment tests are minimal objectives. These minimal objectives describe some of the skills which all beginning fourth or seventh grade students should possess. They do not include many of the objectives that educators would consider important for "average" or "advanced" students to know in mathematics and reading at the beginning of fourth or seventh grade. Some students will have attained considerably more knowledge and skill in these areas than is measured by these tests. In addition, local school districts may have other important objectives which are unique to the local district.

Not All Minimal Objectives Are Tested

Because tests designed to measure all of the minimal objectives in mathematics and reading would

take a prohibitively long time to administer, a selection of objectives to measure this year was made. Because other important objectives were not measured, educators should not conclude that their students have attained all of the minimal objectives in these areas even if they attain all of the objectives measured this year. Additional follow-up assessment efforts would be needed in local schools if a comprehensive assessment of minimum mathematics and reading performance objectives is desired.

Criterion Levels Are Preset

The criterion level for attainment of each objective has been set at four out of five test items. At this level the chance of a pupil exceeding the criterion score by guessing is acceptably low. However, it is still possible for a small percentage of students to attain some objectives by guessing, since multiple-choice questions were used. For some objectives, this criterion level may not be an exact reflection of the intent of the educators who framed the objective. It is important that local educators consider this possibility when interpreting their assessment results.

Review the Objectives and Test Items Carefully

The performance objectives measured in this year's educational assessment program represent a consensus of many people concerning the minimal skills every fourth or seventh grader should possess. It is possible, however, that a few of the performance objectives have been inappropriately placed at the beginning of fourth or seventh grade.

In addition, a few of the test items which measure the performance objectives may be less than optimal measures of the objectives. Although an extensive validation procedure was used to eliminate poor items and inappropriate objectives, it is possible that some poor items and inappropriate objectives were not eliminated in that process. Local educators should be particularly careful when examining their results to review the objectives for appropriateness and the test items for soundness.

Who Is Responsible for Educational Needs that Are Discovered?

The purpose of the objective-referenced tests in mathematics and reading is to identify specific educational needs of students. The results are most appropriately useful to plan instruction or reinstruction of the students tested, to identify weakness in the curriculum of prior grades, or to indicate needs for professional development activities. It is not the purpose of the objective-referenced tests to place

blame, but to encourage all those involved in education (teachers, counselors, administrators, curriculum specialists, board members, parents, students, and others) to examine the results to determine how the entire system can better meet the needs of all students. Because the tests used this year cover objectives that may be attained over a range of several grades (depending on the pace at which students learn), it is not appropriate to assume that one particular teacher is responsible for teaching those skills. This underscores the need for an examination of the assessment results by representative groups of persons concerned with education.

Safeguards Against Error

Great care is taken to prevent errors in preparing assessment reports. Steps are taken to confirm the accuracy of each step: scoring the tests, matching with data from state records, and mailing reports. Although these steps insure a high overall accuracy rate, a remote possibility exists that a specific error will escape detection. If you find reason to question any part of your report, please contact a member of the Assessment Program staff. Because of space limitations, it is impossible for Measurement Research Center to retain answer sheets indefinitely. Therefore, questions about the accuracy of results based on pupil responses must be raised within nine months after the testing.

APPENDIX A

MINIMAL PERFORMANCE OBJECTIVES
MEASURED IN THE 1973—74
MICHIGAN EDUCATIONAL ASSESSMENT PROGRAM

MATHEMATICS OBJECTIVES MEASURED IN THE 1973—74 MICHIGAN EDUCATIONAL ASSESSMENT PROGRAM* Grade 4

No.	Code**	Objective
1.	AR-I-A-6	Given a set of objects, the learner will recognize objects that are the same size.
2.	AR-I-A-8	Given an object shaped like a circle, triangle, square, or rectangle, the learner will choose the shape the object represents.
3.	AR-I-A-16	Given a set of three containers, one full, one empty, and one half-filled, the learner will choose the containers that are arranged from full to empty.
4.	AR-I-A-24	Given a collection of five objects of varying lengths, the learner will identify the longest or the shortest, as requested.
5.	AR-I-A-39	Given five small toys in a line, the learner will identify the first toy and the last one.
6.	AR-I-B-7	Given a set with less than ten objects, the learner will identify an equivalent set.
7.	AR-I-B-32	Given a set of two to eight objects, the learner will identify a set having fewer members than the original set.
8.	AR-I-B-40	Given a line marked with congruent segments and a set of number cards (0—10), the learner will choose the appropriate number card for the point on the line.
9.	AR-I-B-43	Given any three numbers, 0—10, the learner will identify which number is the greatest and which is the least, on request.
10.	AR-I-B-44	Given two consecutive even or odd numbers, 0—9, the learner will name the number that comes between the two given numbers.
11.	AR-I-B-45	Given a number from 1 to 8, the learner will identify the number that comes before or after the given number.
12.	AR-I-64	Given a set of tens and ones representing a number less than 100, the learner will identify the numeral.
13.	AR-I-B-65	Given a set of sequentially ordered whole numbers within a decade less than 100, such as 31, 32, . . . 40, the learner will identify the number that comes immediately before or after a given number, as requested.
14.	AR-I-B-67	Given 2 two-digit numbers, the learner will tell which number is greater and which number is less.

* This list represents all of the objectives that will be assessed in the 1973—74 Program. Other important objectives not assessed are available in the Minimal Performance Objectives for Mathematics in Michigan, Michigan Department of Education, 1973. The objectives listed here were used in the development of the assessment measures. Because of the group-administered nature of these measures, minor wording changes were made in the objectives. Educators should refer to the complete set of objectives for the original wording of these objectives.

** Code number reference used in the full list of performance objectives named in the above footnote.

15. AR-I-B-70 Given a set of dimes and pennies valued between 11 and 99 cents (one dime, one penny to nine dimes, nine pennies), the learner will state the value.

16. AR-I-B-79 Given any three-digit number, the learner will write expanded notation to 1,000, first by using place value words and then by using numerals.

17. AR-I-B-81 Given a random list of two- and three-digit numbers, the learner will identify the list that is in ascending order.

18. AR-I-B-82 Given 2 three-digit numbers which have the same digits but in different positions, the learner will compare them to determine which is greater and which is less.

19. AR-I-B-84 Given a counting sequence of two or four numbers, the learner will write the next number in the sequence.

20. AR-I-B-85 Given the counting numbers 1—10, the learner will indicate those that are multiples of 2.

21. AR-I-B-86 Given a set of objects, the learner will select another set that will have twice as many objects.

22. AR-II-A-10 Given addition exercises involving a two-digit number plus a one-digit number requiring no regrouping (carrying), the learner will find the sums with or without the use of aids.

23. AR-II-B-6 Given a word problem read by the teacher, involving addition or subtraction combinations to 10, the learner will identify the operation and the sum or difference.

24. AR-II-B-9 Given a set of objects or pictures showing a subtraction relationship with combinations to 18, the learner will identify an appropriate number sentence.

25. AR-II-B-11 Given a subtraction word problem read by the teacher involving combinations to 18, the learner will: (1) identify the operation, (2) identify an appropriate number sentence, and (3) identify the answer.

26. AR-II-B-13 Given two sets of objects, one with more objects than the other, the learner will identify how many more members it has.

27. AR-II-B-15 Given a two-digit number, the learner will subtract one-digit numbers with no regrouping (borrowing) with or without the use of aids.

28. AR-II-B-16 Given a two-digit number, the learner will subtract a two-digit number with no regrouping (borrowing).

29. AR-III-D-1 Given groups of less than 13 objects and a statement (½ of___, ¼ of__), the learner will identify the group that shows the appropriate fractional part of the whole.

30. M-I-A-5 Given rulers specially scaled in inches and half-inches, the learner will identify the measurement of objects to the nearest inch.

31. M-II-A-6 Given the reading "_____ o'clock" and a clock face, the learner will identify the clock showing the appropriate time.

32. M-II-B-3 Given three to five different amounts of money, all less than or equal to $5.00, the learner will identify the greatest or the least.

33. M-II-C-1 Given a Fahrenheit or Centigrade thermometer, the learner will identify the temperature (above zero) to the nearest degree.

34. G-I-A-2 Given pictures of various shapes, the learner will identify circles, triangles, squares, and rectangles as requested.

35. AL-1 Given a statement of equality involving addition or subtraction facts and a placeholder for the sum or difference, the learner will supply the sum or difference.

MATHEMATICS OBJECTIVES
MEASURED IN THE 1973—74
MICHIGAN EDUCATIONAL ASSESSMENT PROGRAM
Grade 7

No.	Code	Objective
1.	AR-I-B-87	Given any four-digit number, the learner will identify the number that is 100 or 1000 more or less than it is, without using formal addition or subtraction.
2.	AR-I-B-89	Given a number orally, the learner will identify the arabic numeral.
3.	AR-II-A-22	Given addition exercises involving a three-digit number plus a one-, two-, or three-digit addend, with or without regrouping (carrying), the learner will identify the sums, using any technique.
4.	AR-II-A-26	Given addition problems involving two or three addends with three, four, five, or six digits, with or without regrouping, the learner will find the sums, using any techniques.
5.	AR-II-B-20	Given a three-digit number, the learner will subtract a two- or three-digit number, with or without the use of aids.
6.	AR-II-C-6	Given a repeated addition sentence, the learner will represent it as a multiplication sentence with its product.
7.	AR-II-C-11	Given two numbers, the learner will demonstrate that the order in which they are multiplied does not change the product.
8.	AR-II-C-13	Given a one-digit number (10, 20 . . .), (100, 200 . . .), the learner will state the product.
9.	AR-II-C-15	Given a two-digit number to be multiplied by a one-digit number, the learner will identify the product, with or without aids.
10.	AR-II-D-5	Given a sentence with one single digit, a missing factor, and a product (whole numbers), the learner will identify the missing factor.
11.	AR-II-D-7	Given a division fact, the learner will identify it rewritten as a multiplication fact.
12.	AR-II-D-9	Given a one-digit divisor (factor) and a dividend (product) of less than 100, the learner will identify the quotient (missing factor) if there is no remainder.
13.	AR-II-D-15	Given an exercise with a dividend of four digits or less, and a one-digit divisor, the learner will identify the quotient.
14.	AR-III-A-1	Given several objects, some divided into congruent parts, some divided into noncongruent parts, the learner will identify congruent parts.
15.	AR-III-A-18	Given a diagram divided into congruent parts, with some parts shaded, the learner will identify the shaded area by identifying an appropriate fraction.
16.	AR-III-A-19	Given any five fractions with like denominators, in random order, the learner will identify them in order (halves, thirds, fourths, fifths, sixths, eighths, tenths); with or without the use of aids.

17. AR-III-B-4 Given two common fractions with like denominators and a sum greater than 1, the learner will identify the sum, with or without the use of fractional cut-out parts.

18. AR-III-B-7 Given two mixed numbers with like denominators, the learner will write the sum.

19. AR-III-C-4 Given a mixed number and a fraction with like denominators of 2, 3, 4, 6, or 8, where no regrouping is necessary, the learner will find the difference.

20. AR-III-C-6 Given a whole number and a common fraction with a denominator of 2, 3, 4, 6, or 8, the learner will find the difference with or without the use of fractional parts.

21. AR-III-D-4 Given two unit fractions with denominators less than seven, the learner will compute the product with or without the use of a model.

22. AR-IV-A-3 Given a model of a fraction illustrating hundredths, the learner will identify the decimal fraction as illustrated.

23. AR-IV-A-7 Given a decimal fraction of no more than three places, the learner will name the place value of each digit, without aids.

24. AR-IV-B-3 Given a verbal problem involving addition and subtraction of decimal numbers involving only tenths, the learner will find the answer.

25. AR-IV-B-6 Given a verbal problem involving addition and subtraction of decimal numbers involving tenths and hundredths, the learner will find the answer.

26. AR-IV-B-9 Given an addition and subtraction decimal problem in horizontal or vertical form with no more than five (5) digits and no more than three (3) decimal places, the learner will find the sum or difference.

27. AR-VI-15 Given a picture of sets paired in (A) a one-to-one, (B) a many-to-one, or (C) a one-to-many ratio and part of another pair, the learner will identify the pair that keeps the ratio equivalent.

28. M-I-A-10 Given rulers specially scaled in quarter inches or eighth inches, the learner will measure objects to the nearest quarter unit.

29. M-I-B-8 Given a polygon, the learner will estimate its area in square units.

30. M-I-C-7 Given a drawing of a rectangular solid divided into units (dimension less than or equal to 5 units), the learner will name the number of units in it.

31. M-II-A-10 Given a clock face with hands on it, the learner will choose the correct time notation.

32. M-II-A-11 The learner will use A.M. and P.M. notation in writing time.

33. M-II-B-7 Given two money values, the learner will add or subtract, using dollars and cents notation.

34. M-II-B-8 Given two money values, the learner will choose the approximate sum or difference to the nearest dollar or ten cents.

35. M-II-B-9 Given verbal problems consisting of one or two operations involving money values less than or equal to $20, the learner will solve the problems.

36.	M-II-C-3	Given a Fahrenheit or Centigrade thermometer, the learner will identify temperatures to the nearest degree, using the degree [°] symbol.
37.	G-I-A-4	Given a set of quadrilaterals, the learner will identify and name a parallelogram, a square, and a rectangle.
38.	G-I-B-3	Given models of lines or line segments, some of which are parallel, intersecting, and perpendicular, the learner will identify and name each.
39.	G-I-B-5	Given the description of a plane, and a part of a plane, the learner will identify surfaces which represent a plane or part of a plane.
40.	AL-2	Given a statement of equality involving addition, subtraction, or multiplication facts and containing a placeholder or letter, the learner will identify the missing number.
41.	AL-4	Given a pair of whole numbers or number phrases less than 1,000, the learner will identify the appropriate symbol of equality or inequality, $<$ or $=$ or $>$.
42.	AL-5	Given an equation involving one or zero, the learner will complete the sentence.
43.	AL-7	Given a numerical statement involving the distributive property and a placeholder, the learner will insert the missing value.
44.	AL-10	Given a verbal exercise involving a number in a single operation, the learner will write a related algebraic expression.
45.	P-9	Given a coordinate system using whole numbers and/or letters and given 3 pairs of coordinates, the learner will locate the points.

READING OBJECTIVES
MEASURED IN THE 1973–74
MICHIGAN EDUCATIONAL ASSESSMENT PROGRAM*
Grade 4

No.	Code	Objective
1.	2.1	Given a reading selection at the third grade level, the learner will match a series of words in the selection with appropriate definitions.
2.	2.2	Given a set of phrases, the student will indicate those phrases which have the same meaning.
3.	3.1	Given a reading selection at the third grade level, the learner will answer multiple-choice questions with words and/or phrases extracted from that selection.
4.	3.2	Given a reading selection at the third grade level in which every fifth word has been replaced with a blank, the learner will choose the exact word appropriate to the blank space at 50% accuracy.
5.	4.1	Given a method of arranging data, the learner will identify the method (e.g., color, size, importance, time, etc.).
6.	4.4	Given a series of randomly placed words, the student will be able to alphabetize the words through the first three letters.
7.	5.1	Given a series of reading selections, the learner will indicate those which are factual.
8.	5.2	Given a series of reading selections, the learner will indicate those which are fictional.
9.	6.1-6.3	Given a reading selection, the learner will be able to identify the author's purpose (e.g., persuasion, entertainment, propaganda, etc.).
10.	7.1	Given a reading selection at the third grade level, the learner will select from a list of possible titles the one most appropriate as the title for that selection.
11.	7.2	Given a reading selection at the third grade level, the learner will select from a series of still pictures the one picture most appropriate in depicting the main idea of the selection.
12.	7.3	Given a reading selection at the third grade level, the learner will select from a number of short summaries the one which best summarizes the selection.
13.	8.4	Given a reading selection at the third grade level, the learner will match a series of direct quotations from the story with the character who is speaking.
14.	9.3	Given a reading selection at the third grade level, the learner will correctly answer a series of multiple choice questions relating to the sequence of events or ideas presented in the selection.

* This list represents all of the reading objectives that will be assessed in the 1973-74 program. Other important objectives not covered in these tests are available in the list of Communication Skills Performance Objectives available from the Michigan Department of Education.

15. 10.2 Given three or more selections at the third grade level, the learner will choose the two most alike in the mood expressed.

16. 10.3 Given a reading selection at the third grade level, the learner will choose from a series of sentences that sentence which best describes how a given character feels in a story.

17. 10.6 Given a selection containing figurative language, the learner will identify the definition of that phrase.

18. 11.1 Given a reading selection at the third grade level, the learner will correctly match a series of causes with a corresponding series of effects.

19. 11.2 Given a reading selection at the third grade level with the conclusion of the story deleted, the learner will select from a series of possible conclusions the one most appropriate to the selection.

20. 13.1 Given a locational question, the learner will choose from a series of reference sources where that item will be found.

21. 13.2 Given a locational question about newspapers, the learner will select the section where he would find the answer.

22. 14.1-14.3 Given a reading selection at the third grade level, the learner will answer correctly a series of multiple-choice questions relating to meanings, generalizations, or conclusions not expressed in the selection itself.

23. * Given a reading selection at the third grade level, the learner will correctly answer a series of multiple-choice questions relating to motivation.

* This objective was omitted from the reading performance objectives after the deadline established for test development.

READING OBJECTIVES
MEASURED IN THE 1973-74
MICHIGAN EDUCATIONAL ASSESSMENT PROGRAM
Grade 7

No.	Code	Objective
1.	18.1	Given a reading selection at the sixth grade level, the learner will match a series of words in the selections with appropriate definitions.
2.	18.2	Given a set of phrases, the student will indicate those phrases which have the same meaning.
3.	19.1	Given a reading selection at the sixth grade level in which every fifth word has been replaced with a blank, the learner will choose the exact word appropriate to the blank space at 50% accuracy.
4.	19.2	Given a reading selection at the sixth grade level, the learner will answer multiple choice questions with words and/or phrases extracted from that selection.
5.	20.1	Given a method of arranging data, the learner will identify the method (e.g., color, size, importance, time, etc.).
6.	21.1	Given a series of randomly placed words, the student will be able to alphabetize the words through the first three letters.
7.	22.1	Given a series of reading selections, the learner will indicate those which are factual.
8.	22.2	Given a series of reading selections, the learner will indicate those which are fictional.
9.	23.1-23.3	Given a reading selection, the learner will be able to identify the author's purpose (e.g., persuasion, entertainment, propaganda, etc.).
10.	24.1	Given a reading selection at the sixth grade level, the learner will select from a list of possible titles the one most appropriate as the title for that selection.
11.	24.2	Given a reading selection at the sixth grade level, the learner will select from a series of still pictures the one picture most appropriate in depicting the main idea of the selection.
12.	24.3	Given a reading selection at the sixth grade level, the learner will select from a number of short summaries the one which best summarizes the selection.
13.	24.4	Given a series of three or more reading selections at the sixth grade level, the learner will choose the two most alike in the ideas expressed.
14.	25.3	Given a reading selection at the sixth grade level, the learner will match a series of direct quotations from the story with the character who is speaking.
15.	26.3	Given a reading selection at the sixth grade level, the learner will correctly answer a series of multiple choice questions relating to the sequence of events or ideas presented in the selection.
16.	27.2	Given a reading selection at the sixth grade level, the learner will choose from a series of sentences that sentence which best describes how a given character feels in a story.

17. 28.1 Given a reading selection at the sixth grade level, the learner will correctly answer a series of multiple choice questions relating to motivation.

18. 29.1 Given a reading selection at the sixth grade level, the learner will correctly match a series of causes with a corresponding series of effects.

19. 29.5 Given a reading selection at the sixth grade level, the learner will answer correctly a series of multiple choice questions relating to meanings, generalizations, or conclusions not expressed in the selection itself.

20. 30.2 Given three or more selections at the sixth grade level, the learner will choose the two most alike in the mood expressed.

21. 31.1 Given a locational question, the learner will choose from a series of reference sources where that item will be found.

22. 31.2 Given a locational question about newspapers, the learner will select the section where he would find the answer.

23. 32.1 Given a reading selection at the sixth grade level with the conclusion of the story deleted, the learner will select from a series of possible conclusions the one most appropriate to the selection.

APPENDIX B

SCHOOL (GRADES 4 AND 7) AND DISTRICT NORM TABLES FOR HUMAN AND FINANCIAL RESOURCE INFORMATION

K-12 DISTRICT NORMS*

MICHIGAN

PERCENTILE DISTRIBUTION	HUMAN RESOURCES					DISTRICT FINANCIAL RESOURCES							PERCENT MINORITY	DROP-OUT RATE	SIZE MEASURE	PERCENTILE DISTRIBUTION
	(1) PROF-INSTRUC-TIONAL STAFF PER 1,000 PUPILS	(2) TEACHERS PER 1,000 PUPILS	(3) AVERAGE YEARS TEACHING EXPERI-ENCE	(4) PERCENT TEACHERS WITH MASTERS DEGREE	(5) AVERAGE CON-TRACTED SALARY OF TEACHERS	(6) SEV PER RESIDENT MEMBER (1971–72)	(7) LOCAL REVE-NUE PER PUPIL (1971–72)	(8) STATE SCHOOL AID PER PUPIL (1971–72)	(9) K-12 INSTRUC-TIONAL EXPENSE PER PUPIL (1971–72)	(10) ELEMEN-TARY INSTRUC-TIONAL EXPENSE PER PUPIL (1971–72)	(11) TOTAL CURRENT OPER-ATING EXPENSE PER PUPIL (1971–72)	(12) TOTAL OPER-ATING MILLAGE (1971–72)	(13) PERCENT OF RACIAL-ETHNIC MINORITY STUDENTS	(14) SCHOOL DROPOUT RATE (1971–72)	(20) TOTAL MEMBER-SHIP	
95	58.5	51.3	12.2	47.1	13442	35210	885	541	777	693	1058	31.46	23.6	9.6	12252	95
90	55.0	48.3	11.4	41.8	12682	28720	735	518	715	640	956	28.93	11.5	8.3	7278	90
85	52.8	46.6	11.0	38.3	12158	24926	641	501	683	609	909	27.63	7.7	7.6	5607	85
80	51.6	45.2	10.6	34.4	11806	22010	584	484	647	590	869	26.66	5.0	6.9	4535	80
75	50.8	44.5	10.2	31.5	11599	20492	542	469	623	567	840	25.70	3.9	6.4	3853	75
70	49.9	44.0	9.8	29.5	11421	19065	510	457	602	547	816	24.91	3.1	5.9	3397	70
65	49.2	43.3	9.4	27.5	11219	17734	479	448	589	525	800	24.26	2.7	5.5	2848	65
60	48.7	42.7	9.1	25.4	11101	16660	450	434	574	513	786	23.70	2.2	5.2	2446	60
55	48.2	42.2	8.7	24.0	10940	15778	425	418	563	503	774	23.02	1.8	4.9	2225	55
50	47.6	41.8	8.4	23.0	10782	14970	399	401	556	492	762	22.23	1.5	4.6	2063	50
45	47.1	41.4	8.2	21.7	10636	14319	381	388	546	482	752	21.72	1.4	4.3	1903	45
40	46.5	41.0	7.9	20.4	10497	13602	362	372	539	473	744	21.06	1.2	4.0	1721	40
35	46.0	40.5	7.6	19.5	10373	12866	341	353	532	462	734	20.56	1.0	3.7	1487	35
30	45.5	40.1	7.4	18.1	10210	12223	326	331	524	451	726	19.96	0.9	3.4	1301	30
25	45.0	39.7	7.0	16.6	10022	11506	313	315	517	441	719	19.21	0.7	3.2	1134	25
20	44.3	39.3	6.7	15.3	9859	11009	289	292	507	431	705	18.49	0.6	2.8	919	20
15	43.6	38.4	6.3	13.8	9559	10309	261	261	501	416	692	17.88	0.5	2.5	777	15
10	42.4	37.8	5.8	11.8	9368	9448	242	208	490	397	675	16.55	0.4	1.9	639	10
5	41.0	36.6	5.3	7.7	9005	8599	205	144	474	372	657	15.50	0.1	1.3	411	5
MEAN	48.3	42.7	8.7	25.0	10909	17452	451	383	583	509	795	22.64	5.2	4.9	4003	
STANDARD DEVIATION	5.5	5.2	2.5	12.1	1319	9008	210	120	98	101	125	4.82	11.3	2.6	12464	
NUMBER OF DISTRICTS	529	529	529	529	529	529	529	529	529	529	529	529	529	528	529	

APRIL 1973

* Because of the nature of the achievement tests and attitude questionnaires used in the 1973–74 MEAP, no percentile ranks or norm tables are available for these variables (variables 15-17, 21-22).

SCHOOL NORMS* MICHIGAN

(SCHOOLS IN K-12 DISTRICTS ONLY)

GRADE 4

PERCENTILE DISTRIBUTION	HUMAN RESOURCES					PERCENT MINORITY	SIZE MEASURE
	(1) PROF. INSTRUCTIONAL STAFF PER 1,000 PUPILS	(2) TEACHERS PER 1,000 PUPILS	(3) AVERAGE YEARS TEACHING EXPERIENCE	(4) PERCENT TEACHERS WITH MASTERS DEGREE	(5) AVERAGE CONTRACTED SALARY OF TEACHERS	(13) PERCENT OF RACIAL-ETHNIC MINORITY STUDENTS	(20) TOTAL MEMBERSHIP
95	58.1	49.4	16.7	66.3	14757	96.8	902
90	54.7	46.5	14.9	50.0	13913	46.1	685
85	52.5	44.8	13.6	42.9	13451	22.4	612
80	50.9	43.5	12.8	39.1	13100	13.5	564
75	49.6	42.3	12.1	35.7	12787	8.0	529
70	48.3	41.6	11.4	33.1	12497	5.4	501
65	47.3	40.9	10.9	30.2	12277	4.0	474
60	46.4	40.2	10.3	27.3	12022	3.1	446
55	45.7	39.6	9.8	25.3	11796	2.6	422
50	44.9	39.0	9.4	23.3	11566	2.1	398
45	44.2	38.5	8.8	21.1	11298	1.7	375
40	43.4	37.9	8.3	18.7	11106	1.4	357
35	42.6	37.4	8.0	16.7	10905	1.2	336
30	41.8	36.8	7.5	14.5	10708	1.0	315
25	40.9	36.3	7.1	12.7	10479	0.8	287
20	40.1	35.6	6.6	9.4	10235	0.6	257
15	38.9	34.9	6.0	6.8	9991	0.4	224
10	37.7	33.9	5.2	0.4	9672	0.1	183
5	36.2	32.6	4.3	0.2	9227	0.0	138
MEAN	46.8	39.8	9.8	25.0	11707	13.1	429
STANDARD DEVIATION	7.1	5.3	3.8	17.2	1705	26.3	220
NUMBER OF SCHOOLS	2395	2395	2394	2395	2395	2395	2394

APRIL 1973

* (See footnote on district norm tables.)

SCHOOL NORMS* MICHIGAN

(SCHOOLS IN K-12 DISTRICTS ONLY)

GRADE 7

PERCENTILE DISTRIBUTION	HUMAN RESOURCES					PERCENT MINORITY	SIZE MEASURE
	(1) PROF. INSTRUCTIONAL STAFF PER 1,000 PUPILS	(2) TEACHERS PER 1,000 PUPILS	(3) AVERAGE YEARS TEACHING EXPERIENCE	(4) PERCENT TEACHERS WITH MASTERS DEGREE	(5) AVERAGE CONTRACTED SALARY OF TEACHERS	(13) PERCENT OF RACIAL-ETHNIC MINORITY STUDENTS	(20) TOTAL MEMBERSHIP
95	64.0	55.7	15.2	60.0	14484	90.1	1309
90	60.1	52.1	13.0	53.1	13783	42.6	1120
85	57.1	49.4	11.4	47.2	13324	19.9	1012
80	54.9	47.8	10.7	43.9	12966	12.8	922
75	53.6	46.8	10.0	40.9	12671	7.5	863
70	52.2	45.5	9.5	38.7	12241	4.7	801
65	51.1	44.6	9.0	36.6	11924	3.7	758
60	50.0	43.7	8.8	33.1	11738	3.0	716
55	49.0	42.9	8.3	31.3	11538	2.4	666
50	48.2	42.3	7.9	28.7	11257	2.0	627
45	47.3	41.4	7.6	26.7	11061	1.6	575
40	46.6	40.9	7.2	25.3	10863	1.3	541
35	45.8	40.2	6.9	23.5	10662	1.1	503
30	45.0	39.5	6.5	21.3	10445	0.9	454
25	44.1	38.7	6.2	19.2	10240	0.7	410
20	43.0	37.5	5.7	16.8	10025	0.6	376
15	41.5	36.2	5.2	14.3	9743	0.4	332
10	39.3	34.9	4.7	11.5	9377	0.3	273
5	37.3	33.1	3.9	6.5	8977	0.1	201
MEAN	49.4	43.2	8.4	30.7	11478	12.0	667
STANDARD DEVIATION	9.5	8.3	3.4	18.1	1758	24.8	338
NUMBER OF SCHOOLS	838	838	838	838	838	838	838

APRIL 1973

* (See footnote on district norm tables.)

APPENDIX C

DEFINITIONS OF THE EDUCATIONAL ASSESSMENT MEASURES

DEFINITIONS OF THE EDUCATIONAL ASSESSMENT MEASURES

The twenty-two measures reported in the 1972—73 Michigan Educational Assessment Program are defined below.

Human Resources

1. **Professional instructional staff per 1,000 pupils.** The information to compute this measure was taken from the 1972 "Fourth Friday Report". The total number of professional instructional staff was obtained by adding the number of elementary and secondary staff (expressed as full-time equivalency) in the following categories: principals, assistant principals, other administrators (excluding districtwide administrative staff), consultants and supervisors, classroom teachers, librarians, audio-visual staff, guidance personnel and school counselors, psychological staff, radio and television instructional staff, teachers of the homebound, and other instructional staff. The total number of pupils was obtained by counting all pupils enrolled in grades one through twelve except special education pupils. Pupils who attended the school for a portion of the day and attended a non-public school for the remainder of the day were included on a full-time equivalency basis. For example, a pupil who attended the school for one-fourth of each day and attended a non-public school for the other three-fourths of each day was counted as one-fourth pupil. In order to obtain the number of professional instructional staff per 1,000 pupils, the total number of professional instructional staff was multiplied by 1,000 and divided by the total number of pupils.

2. **Teachers per 1,000 pupils.** The information to compute this measure was taken from the 1972 "Fourth Friday Report". The total number of teachers was obtained by adding the number of elementary and secondary classroom teachers. Kindergarten teachers, special education teachers, and non-classroom teachers were not included in the total. The total number of pupils was obtained by counting all pupils enrolled in grades one through twelve except special education pupils. Pupils who attended the school for a portion of the day and attended a non-public school for the remainder of the day were included on a full-time equivalency basis. In order to obtain the number of teachers per 1,000 pupils, the total number of teachers was multiplied by 1,000 and divided by the total number of pupils.

3. **Average years' teaching experience.** The information to compute this measure was taken from the 1972 "Fourth Friday Report". The average was obtained by dividing the total years of teaching experience of full-time classroom teachers who work only in a school by the number of such teachers in that school. District level averages were obtained by adding the total years of experience for all schools in the district and dividing by the sum of the full-time classroom teachers in all schools in the district.

4. **Percent of teachers with master's degree.** The information to compute this measure was taken from the 1972 "Fourth Friday Report". It was obtained by dividing the number of full-time classroom teachers who had completed all of the requirements for a master's degree by the total number of full-time classroom teachers. The resultant value was multiplied by 100 to convert to a percent figure.

5. **Average contracted salary of teachers.** The information necessary to compute this measure was taken from the 1972 "Fourth Friday Report". It was obtained by dividing the total annual contractual salaries paid to full-time classroom teachers who work only in a school by the number of such teachers in that school. District level averages were obtained by adding the total annual contractual salaries for all schools in the district and dividing by the sum of full-time classroom teachers in all schools in the district.

The average salary of teachers in 1971—72 did not include supplemental payments such as payments for coaching, summer school, department head bonus, etc. The salary figures reported for 1972—73 include such payments insofar as such payments were part of the contractual agreement between teacher and school district.

6. **State-equalized valuation per resident member (1970—71).** The information to compute this measure was taken from records filed with the Michigan Department of Education. The total state-equalized valuation (SEV) is equal to approximately 50 percent of the fair cash value of the real and personal property in the district. It is calculated as of May 26, 1971 (the fourth Monday in May) and applied to the 1971—72 academic year. In order to obtain a per-pupil value for SEV, the total SEV was divided by resident membership for the 1971—72 academic year. Resident membership, obtained from the 1971—72 "Fourth Friday Report," includes all pupils residing in the district who attended public school in that district or in any other district; resident membership excludes pupils who attended school in the district but resided in another district, as well as excluding pupils who attended private or parochial schools.

7. **Local revenue per pupil 1971—72.** The information to compute this measure was taken from records provided by the local districts and filed with the Michigan Department of Education. The financial information was reported in the Annual School District Financial Report for the fiscal year which ended June 30, 1972. The total value for local revenue included revenue from sources such as the following: property tax (the major source of local revenue), local government appropriations, tuition, transportation fees, revolving funds (i.e., revenue from food services, book stores, and student body activities), rent from school facilities, etc. Tuition from community college patrons was not included in the calculation. In order to obtain local revenue per pupil, total local revenue was divided by the state aid membership (the total number of pupils enrolled in the district as of October 1, 1971, the fourth Friday after Labor Day).

8. **State school aid per pupil 1971—72.** The information to compute this measure was taken from records provided by the local districts and filed with the Michigan Department of Education. The financial data were taken from the Annual School District Financial Report for the fiscal year which ended June 30, 1972. The value for total state school aid represented the direct appropriations from the state, including appropriations for state school aid, driver education, underprivileged children, and other state grants. In order to compute the state school aid per pupil, the total state school aid was divided by 1971—72 state aid membership.

9. **K-12 instructional expense per pupil 1971—72.** The information to compute this measure was taken from records provided by the local districts and filed with the Michigan Department of Education. The financial information was reported in the Annual School Financial Report for the fiscal year which ended June 30, 1972. The total K-12 instructional expense included expenditures for salaries and supplies connected with elementary education, secondary education, special education, summer school, and adult education. Expenditures associated with community colleges were omitted from the calculation. In order to obtain a value for instructional expense per pupil, total K-12 instructional expense was divided by the 1971—72 state aid membership.

10. **Elementary instructional expense per pupil 1971—72.** The information to compute this measure was taken from financial reports provided by the local districts and filed with the Michigan Department of Education. Financial information was reported in the Annual School District Financial Report for the fiscal year which ended June 30, 1972. The elementary instructional expense included expenditures for salaries and supplies connected with elementary education. In order to obtain a value for elementary instructional expense per pupil for districts organized to operate a high school, total elementary instructional expense was divided by the elementary state aid membership, taken from the 1971—72 "Fourth Friday Report". For districts not organized to operate a high school (i.e., those that operate no grade above grade 8) total elementary instructional expense was divided by the K-8 state aid membership. Pre-kindergarten and special education pupils were not included.

11. **Total current operating expense per pupil (1971—72).** The information to compute this measure was taken from records provided by the local districts and filed with the Michigan Department of Education. The financial information was reported in the Annual School District Financial Report for the fiscal year which ended June 30, 1972. The total current operating expense included expenses connected

with adminstration, attendance, health services, pupil transportation, plant operation, plant maintenance, and fixed charges in addition to instructional expenses (including elementary, secondary, special education, summer school, and adult education instructional expenses). Community college expenses were not included in the computation of total operating expense. The value for total current operating expense was divided by the 1971—72 state aid membership.

12. **Total operating millage (1971—72).** The information to compute this measure was taken from records provided by intermediate districts and filed with the Michigan Department of Education. Millage information was reported on the form "1971—72 Tax Levies of School Districts Based on 1971 State Equalized Valuation" submitted to the Department in November of 1971 for the 1971—72 school year. Total operating millage is the tax rate in mills applied to the state-equalized valuation of a district to produce revenue for the operation of its schools (not including building and site or debt retirement millage).

Percent Minority

13. **Percent of racial-ethnic minority students.** Percent of racial-ethnic minority students was computed for each school in the state. The information to compute this measure was taken from the 1972 "Fourth Friday Report". The total number of racial-ethnic minority students included all racial-ethnic minority students in the school. Pre-kindergarten students, kindergarten students, special education students, and part-time students were all included in the total. Since the information was expressed in terms of a head count, part-time students were not counted differently from full-time students. Students were classified as belonging to a racial-ethnic minority group if they were considered by the school to be of that group. Pre-kindergarten students, kindergarten students, special education students, and part-time students were included in the total. In order to calculate the percent of racial-ethnic minority students, the total number of racial-ethnic minority students was divided by the total number of students and the resultant figure was multiplied by 100.

Dropout Rate (1971—72)

14. **School dropout rate.** School dropout rate was computed from information taken from records provided by the local districts and filed with the Michigan Department of Education. The measure was based on figures from the local districts' School Dropout Report and enrollment of students in grades 9-12 during the 1971—72 academic year. Included as dropouts were students who left school for any of the following reasons: married, sent to corrective institutions, accepted employment, or dropped from attendance roll because absent 10-30 days. Not included as dropouts were students who left the district because they transferred to another district, were sent to institutions for defectives, or became sick or died. The dropout rate is calculated by dividing the number of dropouts by the sum of the number of students enrolled in grades 9-12 on the "Fourth Friday" plus new students enrolled during the year, computed from the 1971—72 School Dropout Report. The resultant figure was multiplied by 100.

Achievement

15. **Word Relationships.** The fourth grade Word Relationships test contained 45 verbal analogy problems which were designed to measure students' knowledge of the meaning of words and the relationships between words and concepts. Twenty minutes were allowed to work on the test. The seventh grade test contained 38 questions of the same type. The time allowed to work on this test was 15 minutes.

16. **Reading.** The reading tests are described in Section I of this report.

17. **Mathematics.** The mathematics tests are described in Section I of this report.

Size Measures

18. **Grade 4 membership.** Grade 4 membership was obtained by counting all full-time pupils enrolled in grade 4 except special education pupils.

19. **Grade 7 membership.** Grade 7 membership was obtained by counting all full-time pupils enrolled in grade 7 except special education pupils.

20. **Total membership.** Total membership was obtained by counting all full-time pupils in all grades operated by the district from kindergarten through the 12th grade, except special education pupils.

Attitude Measures

A pupil attitude questionnaire was offered for local district use on an optional basis. In districts that elected to use the questionnaire it was administered by reading the items aloud while pupils read them silently, recording their answers on the questionnaire itself. The results of this anonymous questionnaire were reported in the form of summaries aggregated at the classroom, school, and district level.

21. **Attitude toward self** was obtained by counting the favorable responses to the 15 questionnaire items toward self and subtracting the unfavorable responses. "I'm not sure" responses and omits were not counted. The resulting scores were converted to a five-point scale extending from 1 (very unfavorable) to 5 (very favorable).

22. **Attitude toward school** was obtained by counting the favorable responses to the 15 questionnaire items that reflect attitude toward school and subtracting the unfavorable responses. "I'm not sure" responses and omits were not counted. The resulting scores were also converted to a five-point scale extending from 1 (very unfavorable) to 5 (very favorable).